

Case study

Psoas abscess secondary to appendicitis complicated by pleural effusion

Running title:

Psoas abscess appendicitis

Abstract

Psoas abscess (PA) is a rare presentation and even more so where appendicitis is the cause. Mortality from PA is high given its non-specific symptoms and therefore requires a high index of suspicion with timely imaging and diagnosis. This report details a case of psoas abscess secondary to appendicitis which was complicated by right sided pleural effusion.

Keywords

Psoas abscess, appendicitis, pleural effusion

Introduction

Psoas abscess (PA) is an uncommon presentation and is very rare as a complication of acute appendicitis. The incidence of PA is reportedly 0.4/100 000 and often presents with the classic triad of hip pain, limp and fever, with other symptoms of back or flank discomfort also being described [1]. Psoas abscess can be primary or secondary with primary presentation usually from haematogenous or lymphatic spread from another site. Secondary PA usually occurs as a result of local spread from a site of inflammation or infection [2]. The most common secondary cause is Crohn's disease but other causes include diverticulitis, ulcerative colitis, colorectal carcinoma and appendicitis [3].

Appendicitis as a cause of PA is rarely observed at 14.6% of all cases [4]. Use of imaging such as computed tomography and magnetic resonance imaging can greatly assist in diagnosing iliopsoas abscess secondary to appendicitis but clinically it is difficult to diagnose based on non-specific symptoms. Mortality in secondary PA is high at 19% therefore a high index of suspicion is required to prevent fatal outcomes and ensure timely diagnosis [5]. Here we present a case of a severe PA infection secondary to acute appendicitis.

Case presentation

A 45 year old man is transferred from a peripheral hospital with a 3 week history of right sided back pain. He had been having subjective fevers and night sweats as well as anorexia with a 12 kg weight loss. At the time of presentation the patient was in septic shock with a fever up to 38.5 and a blood pressure of 85/52. Peripheral noradrenaline was commenced in the emergency department. Inflammatory markers were elevated with a crp of 275. A CT was performed which demonstrated a very large multiloculated abscess involving the right iliopsoas with an adjacent collection in the right iliac fossa involving the distal end of the appendix. This was suggestive of acute appendicitis with peri appendiceal abscess extending into the right psoas muscle.

The patient had a subsequently lengthy admission with several complications. The patient was taken to ICU for vasopressor support and initially underwent a CT guided drainage of the abscess with interventional radiology which extracted faeculent purulent material with the growth of gram negative rods, gram positive cocci

suggestive of streptococci, gram positive rods and polymorphs. The drain remained in situ for 7 days during which the patient required ongoing vasopressor support and had persistent fevers. On day 6 a loculated right sided pleural effusion was noted with over 400mls of fluid. An ultrasound guided chest drain was placed which remained in situ for 5 days before it needed to be replaced due to low output despite significant pleural effusion on imaging. He was also found to have a bacteraemia with gram negative rods and vancomycin was added to the piperacillin/tazobactam antibiotic regimen. On day 15 due to ongoing poor chest drain outcomes, fibrinolysis of pleural effusion was carried out with Alteplase resulting in significant ongoing chest drain outputs between 250-600mls. Chest drain was removed on day 18 of admission with nil complications.

After removal of chest drain, the patient was able to be discharged home on day 22 of admission on 6 weeks of piperacillin/tazobactam. Follow up CT at 3 weeks showed resolving inflammatory features noted at the right lung base and right flank. The patient was also reviewed in clinic at this time and was recovering well with no further fevers, abdominal or back pain.

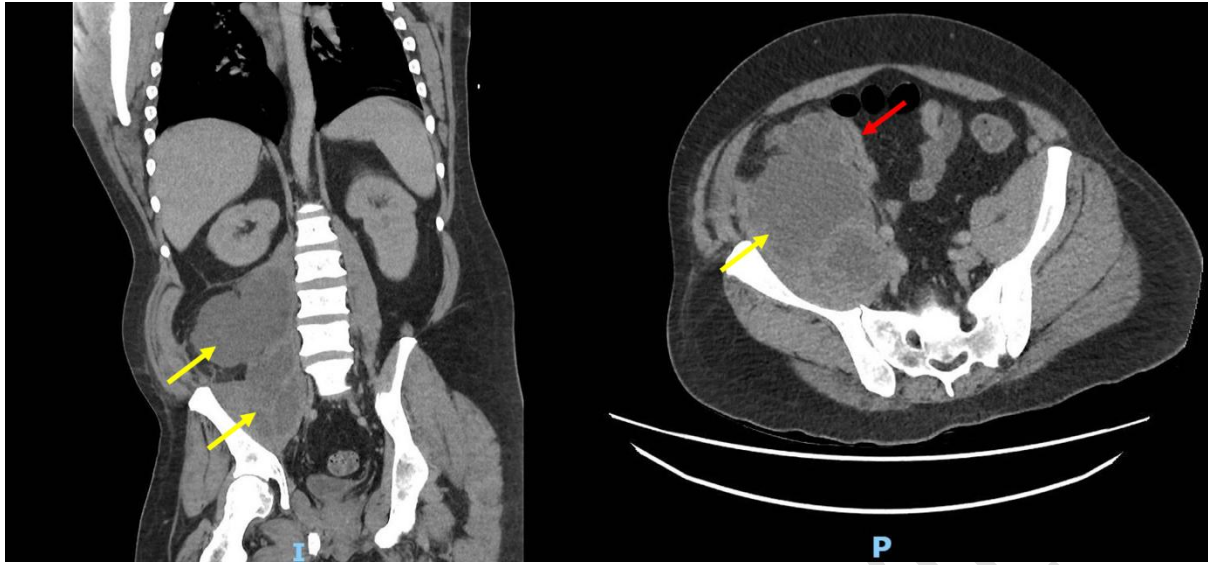


Figure 1: Axial and coronal computed tomography images on presentation with red arrows pointing to iliopsoas abscess and yellow arrows pointing to appendix in contact with abscess

UNDER PEER REVIEW

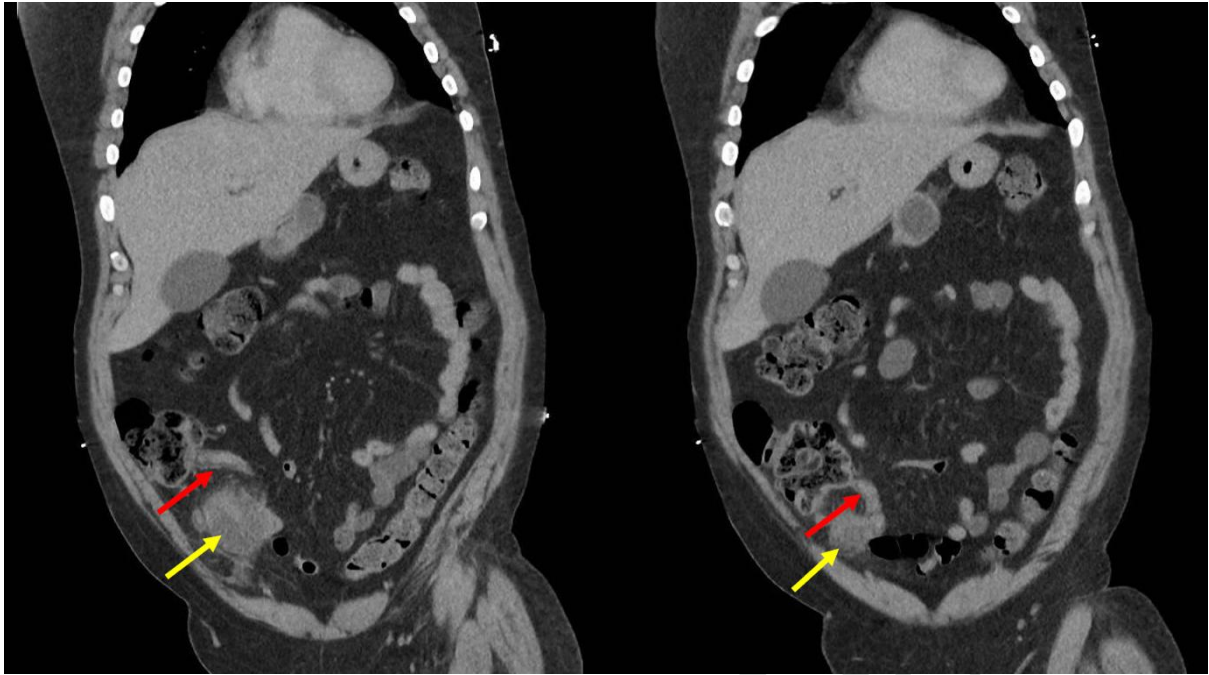


Figure 2: Coronal computed tomography images on presentation with red arrows pointing to iliopsoas abscess and yellow arrows pointing to appendix in contact with abscess

UNDER PEER REVIEW

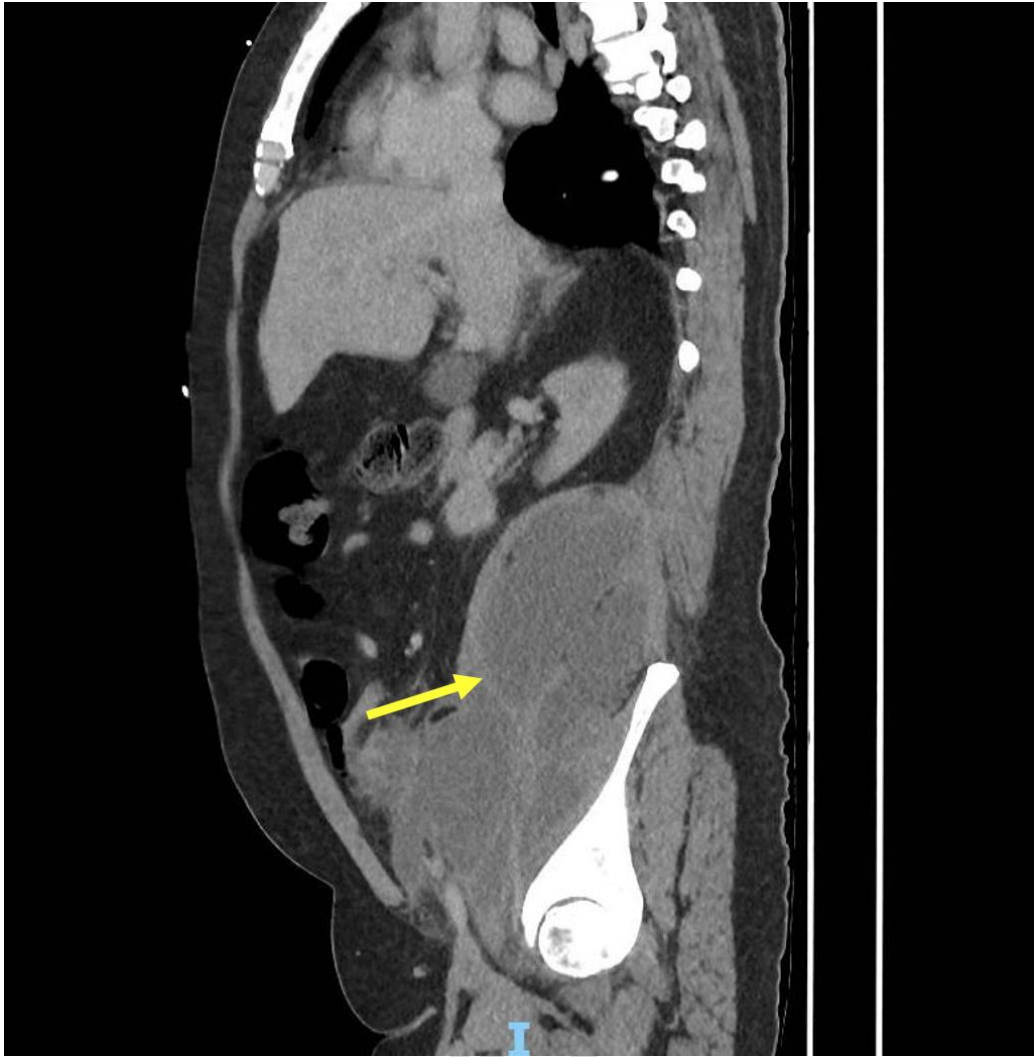


Figure 3: Transverse computed tomography images on presentation with red arrows pointing to iliopsoas abscess and yellow arrows pointing to appendix in contact with abscess



Figure 4: Coronal computed tomography images of right sided pleural effusion

UNDER PEER

Discussion

PA secondary to appendicitis is rare and described mainly as case reports in the literature [6-9]. Previously PA was commonly associated with spinal tuberculosis, however today it is more common in immunocompromised patients with staph aureus as the most common cause [10]. The causative organisms can vary depending on the source as gram negative organisms or gastrointestinal bacteria may also be present [7-9].

PA has a high morbidity and mortality primarily due to variations in signs and non-specific symptoms on presentation. In our case, the patient did present with symptoms which suggested psoas abscess however the diagnosis was delayed. This patient had previously presented to a peripheral hospital where he had been diagnosed with musculoskeletal back pain and referred to a general practitioner for follow-up. Due to the missed diagnosis, the patient presented to our centre in septic shock and requiring haemodynamic support in ICU. The diagnosis of PA was only confirmed on imaging along with the underlying cause of appendicitis.

Management of PA can be varied based on the presentation. In majority of cases secondary to appendicitis, initial drainage of the abscess using interventional radiology followed by appendectomy occurs either during the same admission or at an interval of 6-8 weeks [6-9]. The main complications reported in such cases have been recollection of the psoas abscess with a cutaneous fistula [9]. Complications of pleural effusion secondary to PA are rarely reported [10-11]. Often these effusions are drained alongside the PA however in our case the effusion likely developed into an empyema which was difficult to drain. The use of thrombolytic therapy to break

down empyema has been shown to be an effective method of drainage and avoids thoracic surgery [12]. The use of alteplase was certainly effective in our case and reduced the morbidity of unnecessary surgery.

Conclusion

PA is a rare occurrence particularly with acute appendicitis as its secondary cause. Given the high morbidity and mortality from PA it is important to have a high index of suspicion and ensure prompt imaging and diagnosis occurs. Our case highlights the serious complications which can occur in PA and aid management of similar cases.

References

1. Shields D, Robinson P, Crowley T P. Iliopsoas abscess: a review and update on the literature. *Int J Surg*. 2012; 466-469
2. Adelekan MO, Taiwo SS, Onile BA. A review of psoas abscess. *Afr J Clin Exp Microbiol* 2004;5(1)
3. Agrawal SN, Dwivedi AJ, Khan M. Primary psoas abscess. *Dig Dis Sci*. 2002;47
4. Ricci MA, Rose FB, Meyer KK. Pyogenic psoas abscess: worldwide variations in etiology. *World J Surg* 1986;834-843
5. Mallick IH, Thoufeeq MH, Rajendran TP. Iliopsoas abscess- es. *Postgrad Med J* 2004; 459-462
6. Al Sheri D M, Asiri A K, El Maksoud W M A. Late onset ilio-psoas abscess due to stump appendicitis: a case report. *J Biomed Res*. 2017; 31(5): 462-465
7. Choi K W, Lee W Y. Treatment of appendicitis with iliopsoas abscess by laparoscopic one step surgery. *J Curr Surg*. 2017; 7(1-2): 23-25
8. Devine J. Psoas abscess following acute appendicitis. *Aust N Z J Surg*. 1946 Jan;15:217
9. Otowa Y, Sumi Y, Kanaji S, Kanemitsu K, Yamashita K, Imanishi T et al. Appendicitis with psoas abscess successfully treated by laparoscopic surgery. *World J Gastroenterol*. 2014; 20(25): 8317-8319
10. Moslemi S, Tahamtan M, Hosseini S V. A late-onset psoas abscess formation associated with previous appendectomy: a case report. *Bulletin Emerg & Trauma*, 2014;2(1):55

11. Kazama I, Aoshima M, Ohmagari N, Usui Y, Tada H, Chohnabayashi N, et al. Psoas abscess caused by nephrolithiasis with perirenal abscess complicated with pleural effusion. *Nihon Kokyuki Gakkai Zasshi*. 2000 Nov;38(11):860-4.
12. Kumar S, Mohanty A, Hada V, Gupta G, Sekhar S. A Case of Recurrent Right-Sided Loculated Pleural Effusion With Right Psoas Abscess. *Cureus*. 2021 Nov 29;13(11)
13. Altmann ES, Crossingham I, Wilson S, Davies HR. Intra-pleural fibrinolytic therapy versus placebo, or a different fibrinolytic agent, in the treatment of adult parapneumonic effusions and empyema. *Cochrane Database Syst Rev*. 2019 Oct 30;2019(10)